

Butte County Agricultural Department

Management Practices Report

For The Irrigated Lands Regulatory Program

Pursuant to Contract agreements # 05-183-150-3 and #07-079-150-0, exhibit "A" (Scope of Work)

Introduction:

As part of the contract the Agricultural Commissioner of Butte County agreed to provide services to the Central Valley Regional Water Quality Control Board to support the Irrigated Lands Regulatory Program (ILRP), specifically to evaluate a number of agricultural sites and operations including Coalition Group water monitoring sites, and carry out other activities to identify and document management practices that are specific and appropriate to the agricultural operations within the Butte-Yuba-Sutter watershed. Also, the contract specifies the assessment of management practices and their effectiveness to protect water quality. The following are the results of document research, consultation with local representatives of the agricultural industry and field observation within Butte County.

Best Management Practice

The phrase "Best Management Practices" (BMPs) is used throughout the agricultural industry, often in a very general way, to refer to management practices that are being studied in order to determine their effectiveness in preventing particular environmental impact. In this report references to BMPs are not intended to recommend any one management practice over another or to rank management practices in any particular order or to determine the best of all management practices. In this report the abbreviation "MP" will be used rather than "BMP" wherever practical so as not to suggest an approbation of any particular practice.

BMP Specific Definition:

In the context of agriculture and related water quality issues, a "Best Management Practice" is defined as a practice or combination of practices determined to be the most effective, practical means of reducing or preventing potentially contaminated discharge from agricultural land.

Management Practice Observed Criteria:

For any management practice to be incorporated by the industry and accomplish the defined task of reducing non-point source pollution, it appears to need three criteria:

1. **Technical Feasibility:** This is based on research findings, field trials and years of practical field experience that demonstrates or strongly suggests, the MP's effectiveness, alone or in combination with other component practices, in reducing the amount of non-point source pollution from agricultural activities.
2. **Economic Feasibility:** This is based on economic evaluation and practical experience that demonstrate the MP to be cost-effective in reducing the amount of pollution from agricultural non-point source activities.

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3. **Acceptability:** Acceptable practices are those components which do not have any significant adverse factors that would prevent a responsible party from applying and maintaining the practice.

These three criteria are what are likely to establish the priority of any management practice among other alternatives practices. By meeting all three of these criteria a MP is likely to be considered by the industry as pragmatic and practicable.

Management Practice Application:

Ideally, a MP is developed for application to a particular site in order to address a specific environmental concern based on site-specific data gathered and analyzed by a trained and experienced agricultural / resource specialist. Site data considerations may include soils, slope, climate, topography, crops grown, pest load and type and nature, equipment used, water quality, water quantity, and resource conditions.

Ideally, the land owner/operator's objectives, site data, and agricultural type could be used to select the "Best" component practices that alone, or in combination, will meet the goals for that site. A number of alternative practices that not only meet the natural resource objectives (i.e. acceptably clean discharge water), but also meet the landowner/operator's needs and technical and economic capabilities can be prescribed from a developed MP menu having about three general categories.

Suggested Management Practices Categories:

Category one: Management practices which are obvious and directly observable, often related to surface engineering, construction and design and will provide practical control of discharge from the agricultural operation.

Category two: Management practices which are required by regulation and are often procedural in nature.

Category three: Management practices which are not superficial, are technical in nature, require specific and specialized knowledge and designed to address issues or problems that can not be resolved by simple engineering controls or present regulatory requirements.

Examples from each of the categories are documented in the following pages.

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Observed Management Practices:

From the Contract Scope of Work activities:

The following list was compiled from direct observations that were documented by the Butte County Agricultural Department staff during 21 agricultural site inspections, (Ref. No. 1) and farm management interviews throughout Butte County and during the Pine Creek watershed survey. (Ref. No. 2) All were conducted according to the contract agreement.

Many of these management practices were instituted for economic reasons related to the cost of irrigation. Many of the practices were instituted for soil conservation reasons and not specifically to address water quality issues. However; these management practices suggest water quality improvement benefits. The practices are grouped into 5 topic areas and short definitions follow each item.

Run Off Water Management:

1. **Utilizing a digital mapping system:** (ESRI-ArcView) to manage and monitor irrigation, mapping drainage, fertilizer and pesticide application and other farm management activities.
2. **Orchard floors leveled:** to conserve irrigation water and minimize run off.
3. **Orchard floors leveled and graded:** (slope is center too margins) to conserve and minimize run off.
4. **Laser-leveled ground:** this management practice provides the maximum degree of water conservation and discharge control possible from this management practice.
5. **Deep rip ground:** orchard floor preparation to promote soil porosity, nutrient penetration and deep rooting
6. **Tilled and chiseled soil:** between trees to promote percolation.
7. **Orchard boundaries leveed:** to contain irrigation and control flooding
8. **Raised and graded orchard boundary roads:** for irrigation containment.
9. **Natural vegetation strips:** between tree rows and on orchard boundaries, a vegetation strip retains water in the orchard, reduces run-off, slows water movement and binds the soil to prevent erosion.
10. **Riparian buffer area:** to provide a vegetation barrier to the movement of agricultural sprays off site.
11. **Cover cropping:** for soil quality and stability improvement and irrigation control; slows water movement across the orchard.
12. **Inter-planted cropping:** furrowed for water retention and irrigation control.
13. **Vegetation filter strips:** at the discharge points of the field.
14. **Discharge control features:** berms, banks, and levees: prevent the off-site movement of discharge water.

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Irrigation Delivery Water Management:

1. **Sectional piped rotor/ impact sprinkle irrigation:** used in orchards to meter water consumption and minimize run off.
2. **Solid set, rotor sprinkler irrigation:** in orchards improves the irrigation system efficiency.
3. **Micro / high pressure, solid set sprinkler irrigation:** further improves the irrigation system efficiency.
4. **Drip irrigation:** provides the highest order of irrigation system efficiency and reduces orchard humidity (that can lead to increased fungal diseases requiring fungicide applications) but requires a great deal of maintenance to maintain.
5. **A closed recirculation system:** utilizes extensive ditch drains, a retention lake and pumps. Water is pumped to row crops and irrigated by gravity. Tail water circulates back to the retention lake or other storage ponds for reuse.
6. **Filtered reclaimed surface water:** diverted from adjacent run-off for micro-system application.
7. **Retention / recharge ponds and diversion ditches:** drainage systems engineered to recover field runoff from storms or irrigation water.

Retention pond used on the high side of the orchard to catch and control adjacent run-off.

Retention pond used on the low side of the orchard to catch orchard run-off and hold on-site.
8. **Discharge control devices:** features (such as gates, valves, and drain boxes) to control water flow through irrigation rows and checks.

Technical soil moisture monitoring

1. **Electronic soil moisture monitor:** monitors soil moisture levels in the field and greatly increases the ability to conserve water and energy, optimizes crop yields, and minimizes or avoids run-off, soil erosion and water pollution.
2. **Soil tensiometer systems:** used to monitor the status of water in soils by measuring moisture pressure of the soil. This is the force with which water is held in the soil. If the tension of a soil is high (which means the water in the soil is low), plants have to use a lot of energy to remove soil water and therefore grow at a slower rate. This system allows the farmer to micro-manage irrigation requirements.
3. **Stem water potential monitoring:** measures the degree of water stress on the leaf xylem; when the soil dries and the xylem water tension increases, irrigation is required.
4. **Use of crop evaporation / transpiration tables:** for irrigation requirements and scheduling.

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Reduction of Pesticide Use

1. **Pest Control Advisor (PCA) independent of farm chemical suppliers:** PCAs follow an economic threshold / IPM philosophy and therefore write recommendations for chemical use only to the degree and quantity required.
2. **Integrated Pest Management (IPM) program:** IPM instituted by owner or operator. IPM provides a spectrum of pest control strategies including: trapping, bio-control, and growth regulators to reduce pesticide use.
3. **Pesticide rotation:** pest resistance to a pesticide is commonly managed through pesticide rotation. Rotation involves alternating among pesticide classes with different modes of action to delay the onset of or mitigate existing pest resistance. i.e., organophosphates to pyrethrums to growth regulators...
4. **Spot and block spraying:** coupled with **Pest Delimitation Trapping** focuses the pesticide application only to the infested area of the crop or orchard.
5. **Divided pesticide application intervals:** alternate row applications instead of a complete field-wide application, so every other row is sprayed.
6. **Orchard pest trapping and monitoring program:** to determine economic threshold and optimal application time.
7. **Orchard sanitation:** meticulously removing all fruit and dead wood from the orchard eliminates pest harboring debris, prevents over- wintering pest load, therefore reducing spray requirements.
8. **Pruning:** the reduction of foliage can improve air flow through the orchard which reduces humidity and suppresses fungal disease and therefore fungicide use.
9. **Customized aerial application boom:** engineered for optimal particle size and drift control.
10. **Spray rig, equipment, and nozzle calibration:** increases application efficiency and reduces drift.
11. **Organic farming:** varying degree of agricultural chemical use reduction depending on the cultural practice. The agricultural chemicals that can be used are defined on a list approved by the certifying authority.

Environmental / Conservation Practices:

1. **Soil improvement vegetation strips** (leguminous plants): between tree rows and on orchard boundaries for soil management, nutrient improvement and erosion control.
2. **Designated pesticide application buffer areas:** adjacent to sensitive environment.
3. **Riparian / vegetative screen management:** along sensitive environmental areas for wind, chemical drift and erosion control.
4. **Participation in NRCS, Environmental Quality Incentive Program (EQIP) and Conservation Security Program (CSP):** for soil and water resource conservation. These programs are tailored to the specific conservation needs of the agricultural operation.

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5. **Integrated Fertilizer Management (IFM) program:** soil type, timing and concentration specific. Ensures delivery of nutrients at the optimal time and addresses run off and water quality issues.
6. **Soil surface management:** precision tillage and select soil amendments improve the porosity and field hydration capacity and stimulates root production.
7. **Post harvest Irrigation:** to promote early vegetation re-growth that will bind the soil and reestablish the filter strips prior to fall rains.

The presumption here is that; because these are management practices that are presently and generally being used by the industry in the survey area, by default, they all have met the basic criteria of Technical Feasibility, Economic Feasibility and Acceptability.

Reference: Ref. No. 1, 21 Farm Inspection/Investigation Reports forwarded to the ILRP / RWQCB program manager on various dates.

Ref. No. 2, Pine Creek MP Survey Report form, attached

REFERENCE 1:

EXAMPLE OF FARM INSPECTION/INVESTIGATION REPORT

Exhibit E
Inspection /Investigation Report

Butte County Agricultural Commissioner
Performed for Central Valley Regional Water Quality Control Board

Property Owner/Contact(s): Mead Orchards / James Mead			Location (address, parcel number, GPS coordinates) 9093 Troxel Rd., Chico, CA. 95928 N/E cnr Dayton -Durham Rd & Dayton Rd. GPS: N39°39.195, W121°51.698 APN: 039-210-068
Date of inspection: 4/7/2006	Start Time 2:30	End Time 4:30	Inspected by: Mike Brown
Reason for inspection: Task 1B of Exhibit A: Pesticide application inspection for water quality issues.			
Crop/livestock/location/acreage/irrigation method:			
Crop/livestock	Location	Acreage	Irrigation Method
Almonds	Sec.22, T21N, R01E Field 1-5	54	Solid Set Sprinklers
Observations/Notes 54 acres planted to almonds. Bordered on North & East side by almonds, South by Durham-Dayton RD, West by Dayton RD. South West corner borders business/residential lot. Orchard floor essentially flat. Irrigation system dependent on well water. Fungicide application observed on 4/7/2006 Other pesticide applications within last 30 days.			

Exhibit E
Inspection /Investigation Report

Pesticide application during past month:			
Name (type)	Date(s) of application	Amount	Location
Manex	4/07/2006	324 qts.	Almonds, Field 1-5
Pristine	3/19/2006	540 oz.	Almonds, Field 1-5

Management practices observed/effectiveness:

Water Management:
Orchard floor elevation below county road that borders west & south perimeters.
Raised and graded orchard boundary roads for irrigation containment.
Solid set sprinkler irrigation in the orchards. (Micro / high pressure)

Reduction of pesticide use
PCA / IPM program by Scientific Methods independent of farm chemical suppliers.

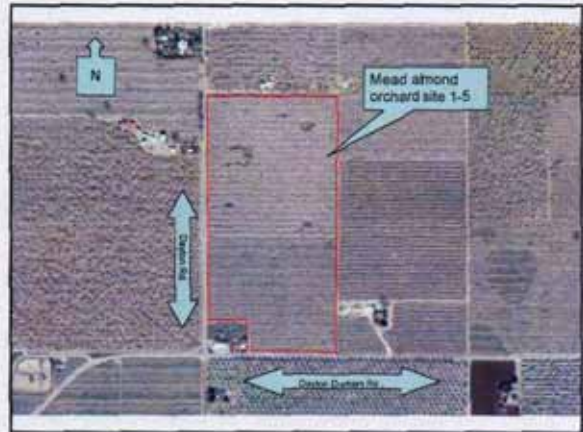
Environmental :
Natural vegetation strips between tree rows and on orchard boundaries.
Orchard floor flat with gradual slope to the S/W corner.

Observations/Notes:

Map, Written Recommendation and Use Report, Photos on CD in Power Point attached.

Mead Orchards / Butte County

- Pesticide application inspection
for water quality issues, Task 1B of Exhibit A
- Application of a fungicide on an almonds orchard by PM Dusters





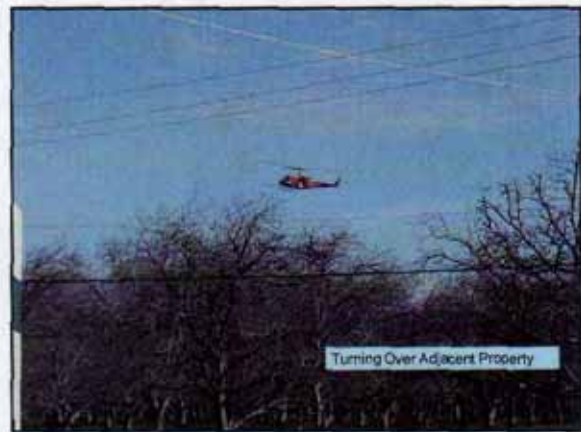
Loading Helicopter



Approaching Target Orchard



Exiting Orchard



Turning Over Adjacent Property





Exhibit E
Inspection /Investigation Report

Butte County Agricultural Commissioner
Performed for Central Valley Regional Water Quality Control Board

Property Owner/Contact(s): Butte County Agricultural Department Sacramento Valley Water Quality Coalition Phone Number: 530-538-7381			Location (address, parcel number, GPS coordinates) Pine Creek Monitoring Site Lat: N 39' 46.882 Long: W 121' 49.259
Date of inspection: 08/20/07	Start Time N/A	End Time N/A	Inspected by: Mike Brown and Robert Hill
Reason for inspection: Exhibit A, Scope of Work Task 2B and 5B Identify, evaluate and document management practices that are specific and appropriate to activities and operations within watershed. Assist Water Board staff by providing information and input that will further the implementation of the Irrigated Lands Program.			
Crop/livestock/location/acreage/irrigation method: See attached: Survey Data Spreadsheet			
Observations/Notes: Part II of a visually survey of agricultural operations adjacent to Pine Creek for the presents of obvious Management Practices that have water quality improvement and protection benefits. <ol style="list-style-type: none">1. Starting at the Nord-Gianella Road Bridge, Pine Creek Monitoring Site, agricultural operations were surveyed on both banks of Pine Creek south to the confluence with the Sacramento River.2. Obvious management practices listed on the survey forms (see attached) were documented, additional data was collected on:<ul style="list-style-type: none">• Significant discharge points into the channel• Notable, significant hydrologic engineering (levees, dams, weirs)• Non agricultural parcels• Any other significant feature3. The survey data from part I and II was combined, compiled, summarized and is available in the attached documents:<ul style="list-style-type: none">• Survey Summary chart• Survey overview and conclusions• Pine Creek survey forms• A CD containing electronic copies and a PowerPoint presentation of the survey			

Ref. No. 2

Exhibit E
Inspection /Investigation Report

Observations/Notes:

Survey Overview

- 14.1 mile length of the creek surveyed
- 54 parcels surveyed
- 50 parcels under agricultural permit
- 7 non-agricultural parcel in the survey area some under ag permit
- 23 agricultural operations having restricted materials permits
- 12,332 total acres surveyed
- 7944 acres under cultivation
- 39 discharge points were documented
- 13 agricultural operations had discharge points directly to the channel (All had some form of discharge control devices)
- 8 agricultural operation had no observable discharge points directly to the channel
- All potential discharge area had heavy vegetation growth
- No significant hydrological engineering in the survey area
- Flow was present in Singer creek (from some source in Tehama County and not a result of discharge in Butte County)
- Back flow from the Sac. River was present in the lower 1 mile of Pine Creek
- There was 1 irrigation discharge to the creek observed

Survey Conclusions

Survey method conclusions:

- The seven MP survey items are likely the observation limits of this kind of survey.
- Any other type of management practice survey would require detailed examination of the agricultural operation.
- The possibility of discharge from secondary and tertiary, etcetera, parcels adjacent the drainage system is beyond the economic scope of this type of survey.
- 31.1 hours per mile of drainage, was required to develop, conduct the survey, analyze and organize the data.

Statistical conclusions about agricultural operations and observed management practices:

1. 91% of the agricultural land surveyed has been leveled
2. 83% had constructed levees or berms adjacent the creek
3. 96% had vegetative buffer areas, filter strips in place, varied in width from ~12 to +200 feet.
4. 83% had some kind of discharge control device or features
 - 39% had no observable discharge points
 - 43% had discharge control devices or features of some kind
 - 17% had no discharge control.
5. 30% had irrigation retention / recharge pond areas or diversion ditches
6. 91% had metered irrigation systems
 - 70% Steel head impact sprinklers
 - 30% Micro sprinklers
 - 17% Drip system
 - 13% Gravity(Exceeds 100% due to multiple system use)
7. No other obvious notable management practice was observed

Ref. No. 2

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Regulatory Management Practices:

From Review of Existing Agricultural Regulations:

The California agricultural pesticide regulatory program contains a number of requirements for environmental assessment and the consideration of potential environmental hazards. These requirements often include the development of mitigation measures in the form of pesticide permit conditions to address potential hazards prior to a pesticide application. These requirements do not always specifically target water quality issues, but their practice (if appropriately implemented) does address the possibility of environmental impact and are intended to prevent contamination to sensitive environment and habitat. Therefore, they are effectively mandatory water quality management practices.

The requirements are referenced and incorporated at critical points in the regulatory process. For example:

- ✓ In training materials prior to testing and certification of private and commercial applicators and advisors.
- ✓ At the time of pesticide permitting, and condition writing.
- ✓ When professional advisors and applicators are utilized.
- ✓ Just prior to and during the actual pesticide application process for restricted materials.

The following are excerpts from the California Food and Agricultural Code (FAC) and Title 3 California Code of Regulations (CCR), Food and Agriculture. These are specific examples of the requirements that constitute regulatory management practices. The pertinent sub-sections are highlighted. Cross references between the two codes are underlined, highlighted and marked with an asterisk.

Title 3 CCR, Division 6, Chapter 2, Pesticides, Article 2. Possession and Use Limitations

6416. Groundwater Protection Restrictions.

- (a) A permit is required for the possession or use of a pesticide containing a chemical listed in section 6800(a) (*groundwater chemical list*) when the pesticide is:
 - (1) Applied in an agricultural, outdoor institutional or outdoor industrial use within a runoff ground water protection area or in a leaching ground water protection area, or
 - (2) Restricted for purposes other than ground water protection.
- (b) A permit is not required for the possession or use of a pesticide containing a chemical listed in section 6800(a) when the pesticide is used in a pest eradication program approved by the Department of Food and Agriculture, unless the pesticide is also restricted for purposes other than ground water protection.
- (c) Notwithstanding the provisions of this article and Article 4, the chemicals listed in section 6800(a) may be applied for research or experimental purposes pursuant to a valid research authorization. The applicant must provide the location of the research or experimental site with the research authorization request. The exemptions found in section 6268 do not apply when a person wishes to use these chemicals for research or experimental purposes.

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Title 3 CCR, Division 6, Chapter 2, Subchapter 4, Article 3. Permit System

6428. Agricultural Permit Applications.

Except as provided in Section 6434(a) (*NOI requirements*), each application for a permit for agricultural use of a restricted material shall include the following information:

- (a) Name and business address of the permittee and signature of either the permittee, or when allowed by the commissioner, the permittee's authorized representative or licensed agricultural pest control adviser;
- (b) Location of each property to be treated;
- (c) Identification of all known areas that could be adversely impacted by the use of the restricted material(s) including hospitals; schools, and playgrounds; residential areas (including labor camps); parks; lakes, waterways, estuaries, and reservoirs; state wildlife management areas; critical habitats of rare, endangered or threatened species; and livestock and crops; (a map or aerial photograph may be used for designating such areas);
- (d) Identification of each commodity or crop, or if there is no commodity or crop the site to be treated;
- (e) Anticipated pest problem(s) for each crop (pest(s) to be controlled)
- (f) Restricted material(s) requiring a permit necessary to control each pest on each commodity, crop, or site;
- (g) Approximate date(s) or crop stage(s) of intended restricted material application(s);
- (h) Expected method of application including the dilution, volume per acre or other units, and dosage;
- (i) Name of the pest control business, if any, and name, business address, and license or certificate number, with expiration date, of the certified private or certified commercial applicator responsible for supervising the possession or use of the restricted material(s).

6432. Permit Evaluation.

- (a) Each commissioner, prior to issuing any permit to use a pesticide and when evaluating a notice of intent, shall determine if a substantial adverse environmental impact may result from the use of such pesticide. If the commissioner determines that a substantial adverse environmental impact will likely occur from the use of the pesticide, the commissioner shall determine if there is a feasible alternative, including the alternative of no pesticide application, or feasible mitigation measure that would substantially reduce the adverse impact. If the commissioner determines that there is a feasible alternative or feasible mitigation measure which significantly reduces the environmental impact, the permit or intended pesticide application shall be denied or conditioned on the utilization of the mitigation measure. When the commissioner determines that there is a likelihood that permit conditions have been or will be violated he shall take appropriate action to assure compliance.

Each commissioner is responsible for knowing local conditions and utilizing such knowledge in making these determinations. Each commissioner shall also consider and, where appropriate, utilize the provisions of [Section 14006.5*](#) and other applicable sections of the Food and Agricultural Code, applicable sections of this code, applicable pest management guides, restricted materials hazard chart, Pesticide Safety Information Series, information obtained from monitoring other pest control operations, and other information required by the director.

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- (b) In addition to the requirement of Sections 6428 (*Permit Application*) and 6430 (*Non-ag applications*), each permit shall contain the following:
- (1) [Appropriate conditions or limitations on the use of the pesticide\(s\)](#) including available Pesticide Safety Information Series leaflets for each pesticide included on the permit;
 - (2) [Requirements, if any, for notice prior to an agricultural use pesticide application](#). In the case of nonagricultural use, notice shall be required to the extent it is necessary to comply with inspection responsibilities and with the monitoring requirements of Section 6436 (*NOI monitoring requirements*); and
 - (3) [Appropriate conditions or limitations such as those described in available pest management guides](#). The commissioner shall inform the permittee of, and where to obtain, any pest management guide applicable to the pest control authorized in the permit.

FAC, Division 7 Agricultural Chemicals, Chapter 3 Restricted Materials

Article 1. General Provisions

***14006.5.** Except as provided in Section 14006.6, no person shall use or possess any pesticide designated as a restricted material for any agricultural use except under a written permit of the commissioner. No permit shall be issued for any restricted material for use in any manner other than pursuant to its registration without the approval of the director. In addition, no permit shall be granted if the commissioner determines that the provisions of subdivision (a), (b), or (c) of Section 12825 (*Directors Action*) would be applicable to the proposed use. [Before issuing a permit for any pesticide the commissioner shall consider local conditions including, but not limited to, the following:](#)

- (a) Use in vicinity of schools, dwellings, hospitals, recreational areas, and livestock enclosures.
- (b) Problems related to heterogeneous planting of crops.
- (c) Applications of materials known to create severe resurgence or secondary pest problems without compensating control of pest species.
- (d) [Meteorological conditions for use](#).
- (e) Timing of applications in relation to bee activity.
- (f) Provisions for proper storage of pesticides and disposal of containers.

[Each permit issued for any pesticide shall include conditions for use in writing.](#)

Title 3 CCR, Division 6, Chapter 3, Subchapter 1, Article 5. Agricultural Pest Control Adviser License

6556. Recommendations.

In addition to the requirement of [Section 12003*](#) of the Food and Agricultural Code, each recommendation shall include:

- (a) Total acreage or units to be treated;
- (b) Concentration and volume per acre or other units;
- (c) Worker reentry interval, if one has been established; preharvest or preslaughter interval; and label restrictions on use or disposition of the treated commodity, by-products or treated area;
- (d) Criteria used for determining the need for the recommended treatment; and

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- (e) Certification that alternatives and mitigation measures that would substantially lessen any significant adverse impact on the environment have been considered and, if feasible, adopted. In addition, the recommendation shall designate the pest by accepted common name.

FAC, Division 6 Pest Control Operations, Chapter 6 Pest Control Advisers

Article 1. General Provisions

***12003.** Agricultural pest control advisers shall put all recommendations concerning any agricultural use in writing. One copy of each such written recommendation shall be signed and dated and shall be furnished to the operator of the property prior to the application. Where a pesticide use is recommended a copy shall also be furnished to the dealer and the applicator prior to the application.

Each written recommendation shall include, when applicable, the following:

- (a) The name and dosage of each pesticide to be used or description of method recommended.
- (b) The identity of each pest to be controlled.
- (c) The owner or operator, location of and acreage to be treated.
- (d) The commodity, crop, or site to be treated.
- (e) The suggested schedule, time, or conditions for the pesticide application or other control method.
- (f) A warning of the possibility of damages by the pesticide application that reasonably should have been known by the agricultural pest control adviser to exist.
- (g) The signature and address of the person making the recommendation, the date, and the name of the business such person represents.
- (h) Any other information the director may require.

Title 3 CCR, Division 6, Chapter 3, Subchapter 2, Article 1. Pest Control Operations Generally

6600. General Standards of Care.

Each person performing pest control shall:

- (a) Use only pest control equipment which is in good repair and safe to operate.
- (b) Perform all pest control in a careful and effective manner.
- (c) Use only methods and equipment suitable to insure proper application of pesticides.
- (d) Perform all pest control under climatic conditions suitable to insure proper application of pesticides.
- (e) Exercise reasonable precautions to avoid contamination of the environment.

6614. Protection of Persons, Animals, and Property.

- (a) An applicator prior to and while applying a pesticide shall evaluate the equipment to be used, meteorological conditions, the property to be treated, and surrounding properties to determine the likelihood of harm or damage.
- (b) Notwithstanding that substantial drift would be prevented; no pesticide application shall be made or continued when:

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- (1) There is a reasonable possibility of contamination of the bodies or clothing of persons not involved in the application process;
- (2) There is a reasonable possibility of damage to nontarget crops, animals, or other public or private property; or
- (3) There is a reasonable possibility of contamination of nontarget public or private property, including the creation of a health hazard, preventing normal use of such property. In determining a health hazard, the amount and toxicity of the pesticide, the type and uses of the property and related factors shall be considered.

FAC, Division 7, Chapter 2 Article 10. Recommendations and Usage

12973. The use of any pesticide shall not conflict with labeling registered pursuant to this chapter which is delivered with the pesticide or with any additional limitations applicable to the conditions of any permit issued by the director or commissioner.

FAC, Division 7, Chapter 3 Article 1. General Provisions

14006. The regulations shall prescribe the time when, and the conditions under which, a restricted material may be used or possessed in different areas of the state, and may prohibit its use or possession in those areas. This usage shall be limited to those situations in which it is reasonably certain that no injury will result, or no nonrestricted material or procedure is equally effective and practical. They may provide that a restricted material shall be used only under permit of the commissioner or under the direct supervision of the commissioner, subject to any of the following limitations:

- (a) In certain areas.
- (b) Under certain conditions relating to safety.
- (c) When used in excess of certain quantities or concentrations.
- (d) When used in certain mixtures.
- (e) In compliance with the industrial safety orders of the Department of Industrial Relations and any order of the director or commissioner.
- (f) On agreement by the owner or person in possession of the property to be treated to comply with certain conditions.
- (g) Any other limitation the director determines to be necessary to effectuate the purposes of this chapter.

Title 3 CCR, Division 6, Chapter 4, Environmental Protection, Subchapter 5. Surface Water

Article 1. Pesticide Contamination Prevention

6960. Dormant Insecticide Contamination Prevention.

- (a) The operator of the property shall meet at least one of the following requirements when making dormant applications:
- (1) Only apply a dormant oil, or a biocontrol agent such as but not limited to spinosad or *Bacillus* sp.; or
 - (2) only apply to a hydrologically isolated site; or
 - (3) divert any runoff with an on-farm recirculating system and/or contain and hold any runoff for 72 hours before releasing into a sensitive aquatic site.

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- (b)** If none of the requirements in subsection (a) can be met, the following dormant insecticide application restrictions shall apply:
 - (1) the operator of the property to be treated shall obtain a written recommendation from a licensed pest control adviser prior to the application; and
 - (2) the application shall not be made within 100 feet of any sensitive aquatic site; and
 - (3) wind speed shall be 3-10 miles per hour (mph) at the perimeter of the application site as measured by an anemometer on the upwind side.
- (c)** Aerial application of dormant insecticides shall only be allowed if:
 - (1) soil conditions do not allow field entry, or approaching bloom conditions necessitate aerial application; and
 - (2) all the requirements in subsection (b) are met.
- (d)** No dormant insecticide application shall occur if:
 - (1) soil moisture is at field capacity and a storm event, forecasted by the National Oceanic and Atmospheric Administration (NOAA) or National Weather Service (NWS), is to occur within 48 hours following application; or
 - (2) a storm event likely to produce runoff from the treated area is forecasted by NOAA/NWS to occur within 48 hours following the application.

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Overview of California Agricultural Pesticide Regulatory Program:

Regulatory requirements for the most part pre-date the present concept of “Best Management Practices”.

The overall purposes of the pesticide regulatory program are found in FAC Division 2, Chapter 2, Section 11501. They include protection of the environment from environmentally harmful pesticides by regulation, and ensuring proper stewardship of those pesticides to achieve acceptable levels of control with the least possible harm to the environment.

Specific to the pesticide permit system, the criteria for designating pesticides as restricted materials in FAC Division 7, Chapter 3, Article 1, Section 14004.5 includes hazard to the environment from drift and hazard of persistent residues that could lead to contamination of the environment. FAC Section 14006.5 requires the California Agricultural Commissioners (CAC) to consider local site-specific environmental conditions before issuing any permit. FAC section 14006.5 also prohibits the CAC from issuing a permit if the pesticide:

- Has demonstrated serious uncontrollable adverse effects.
- Use is less of a public value or greater detriment to the environment than the benefit received from its use.
- Has a feasible alternative that is demonstrably less destructive to the environment (FAC Section 12825).

Many of the code excerpts came to exist as a result of the Pesticide Contamination Prevention Act (PCPA) of 1985 which established a set of data requirements for identifying and tracking of potential and actual contaminants found in ground water or in soil as a result of legal agricultural use. Additionally the regulations designed to implement this program required record-keeping and training for Licensed PCAs to write advisories and recommendations for specific materials Identified as groundwater contaminates.

ILP Management Practices Report

CCR, FAC and the California Environmental Quality Act, CEQA:

Under Section 21080.5 of the Public Resources Code (PRC) regulatory programs (which have protection of the environment among their principal purposes and which require a plan or other written documentation) could be exempted from EIR requirements upon certification by the Secretary of the Resources Agency that the programs meet specified criteria. The PRC provided CEQA/EIR functional equivalency for the Pesticide Regulatory Program.

Chapter 308, Statutes of 1978 (AB 3765) was enacted to facilitate the functional equivalency approach. Among other things, it amended PRC section 21080.5 to more clearly prescribe the procedure the Secretary of the Resources Agency must follow for the certification (of programs in general).

The Legislature made several findings and declarations in Chapter 308 relating to pesticides, pest control, and EIRs specifically:

“ It is the policy of California that environmental review of pesticide use be achieved through the procedures established in PRC Section 21080.5 rather than by EIRs.”

The pesticide regulatory program was certified on December 28, 1979, as “EIR functionally equivalent.” This meant that the State and the CACs and the agricultural industry did not have to prepare an EIR (or negative declaration) on each product or permit approved. Instead of an EIR, documentation on environmental impacts, mitigation measures, and alternatives were required.

The EIR functionally equivalent program must use an interdisciplinary approach that will ensure the integrated use of the natural and social sciences in decision-making.

The permitting process, administered by the CACs, relies on the data submission and evaluation conducted on pesticide products during the registration process to identify potential hazards and suggest mitigation measures (basically, management practices) if pesticide labeling and regulations do not adequately mitigate the hazard.

ILP Management Practices Report

Evaluation of MP Effectiveness:

Documentation of acceptable water quality or the demonstration of improvement in water quality is required to definitively measure the effectiveness of any management practice designed or employed to mitigate water quality issues.

The results from water quality assessment studies required to demonstrate a MP's effectiveness are time dependent. There does not appear to be a quick road to a definitive conclusion.

Given that it is not a practical, time and resource efficient role for the County Agricultural Department to peruse water quality assessment, any effort to assess the effectiveness of the observed management practices, elucidated in this report, is strictly based on their equivalence to data presently documented on proven MPs, existing reference material and inferential logic.

Research revealed multiple "BMP" effectiveness evaluation studies in progress across the United States and Canada, but also revealed that there is limited information on specific categories of MPs and even less documentation of their benefits.

The National Resource Conservation Service (NRCS) appears to have the most comprehensive documentation of agricultural water quality beneficial management practices. The Environmental Quality Incentive Program (EQIP) and The Conservation Security Program (CSP) texts and resource documents list many proven practices that are cross-referenced with the observed management practice documented in the County Agricultural Department survey.

The NRCS guides and questioners were developed for general application across the many cultural practices of the agricultural industry. Therefore, many of the management practices are only applicable to specific types of agriculture and not to the kind found in this study area. In some cases, the methodology of the practices would have to be substantially modified and; hence, are untested and subject to the Technical, Economic and Acceptability Criteria evaluation referred to earlier in this report.

Additionally, the effectiveness of these (NRCS) individual MPs has been tested primarily on plots or small fields, with results extrapolated to the watersheds. These small-scale field tests may not address the compounding variables that occur in large-scale watersheds. For this reason, field-scale modeling may not accurately or completely predict comprehensive results.

Considering the reported pounds of active ingredient that are applied in Butte County each year (2006 = 3,445,277 lbs total active ingredient (A.I.), Ref. No. 3) and the fact that only very small quantities of particular products are being intercepted during the current watershed sampling, the observed, quantified and documented practices presented in this report should be considered among the most effective of Management Practices.

Ref. No. 3, 2006 Department of Pesticide Regulation, Pesticide Use Report Summary, attached

Department of Pesticide Regulation, 2006 Annual Pesticide Use Report Indexed Butte County

This report represents the top five sites in total pesticide use in each county in 2006 and the top five pesticides used on each of these sites. The ranking of sites and pesticides is determined by total acres treated by active ingredient used. The number of applications include only production agricultural applications, and the cumulative acres treated are mostly agriculture. Data are from the Department of Pesticide Regulation's Pesticide Use Report, October 2007.

The number of acres treated means the cumulative number of acres treated. The acres treated in each application are summed even when the same field is treated more than once in a year. (For example, if one acre is treated three times in a year with an individual active ingredient, it is counted as three acres treated.)

Chemical	Pounds	Ag. Apps.	Acres	Chemical	Pounds	Ag. Apps.	Acres
ALMONDSs							
ALPHA-(PARA-NONYLPHENYL)-OMEGA-HYDROXYPOLY(OXYETHYLENE) *	18,869	1,970	99,902	DIMETHYLPOLYSILOXANE *	415	305	14,075
DIMETHYLPOLYSILOXANE *	853	1,005	58,356	ALL OTHER AIS	176,947	4,431	144,688
PYRACLOSTROBIN	5,130	919	52,073	WALNUT TOTAL	410,749	7,412	269,619
BOSCALID	10,099	919	52,073	PRUNE			
GLYPHOSATE, ISOPROPYLAMINE SALT	54,439	1,071	42,509	ALPHA-(PARA-NONYLPHENYL)-OMEGA-HYDROXYPOLY(OXYETHYLENE) *	1,981	285	12,583
ALL OTHER AIS	773,329	8,154	350,368	CAPTAN	27,843	177	9,807
ALMOND TOTAL	862,719	12,502	567,524	CAPTAN, OTHER RELATED	630	177	9,807
RICE							
COPPER SULFATE (PENTAHYDRATE)	885,664	825	64,627	PROPICONAZOLE	971	191	8,644
PROPANIL	252,135	710	55,250	SULFUR	110,695	155	7,872
ALPHA-(PARA-NONYLPHENYL)-OMEGA-HYDROXYPOLY(OXYETHYLENE) *	2,851	649	49,225	ALL OTHER AIS	192,060	1,696	65,504
TRICLOPYR, TRIETHYLAMINE SALT	6,208	463	37,966	PRUNE TOTAL	334,180	2,504	104,411
CLOMAZONE	13,458	320	28,199	PEACH			
ALL OTHER AIS	297,943	2,712	192,153	SULFUR	49,585	138	3,103
RICE TOTAL	1,458,259	5,679	427,420	COPPER SULFATE (BASIC)	46,262	113	2,505
WALNUT							
COPPER HYDROXIDE	137,950	962	37,765	ESFENVALERATE	135	80	2,300
MANEB	60,149	908	35,120	Z-8-DODECENYL ACETATE	34	135	2,116
ALPHA-(PARA-NONYLPHENYL)-OMEGA-HYDROXYPOLY(OXYETHYLENE) *	3,036	528	24,869	E-8-DODECENYL ACETATE	2	135	2,116
CHLORPYRIFOS	32,252	381	17,031	ALL OTHER AIS	100,585	1,137	18,661
				PEACH TOTAL	196,603	1,603	28,686
				ALL OTHER SITES	182,768	2,097	47,926
				BUTTE TOTAL	3,445,277	31,797	1,445,585

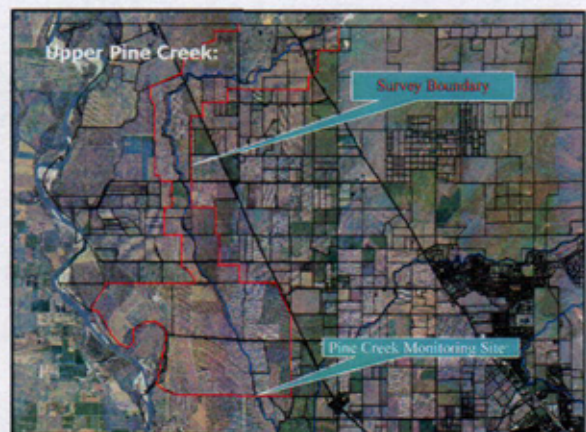
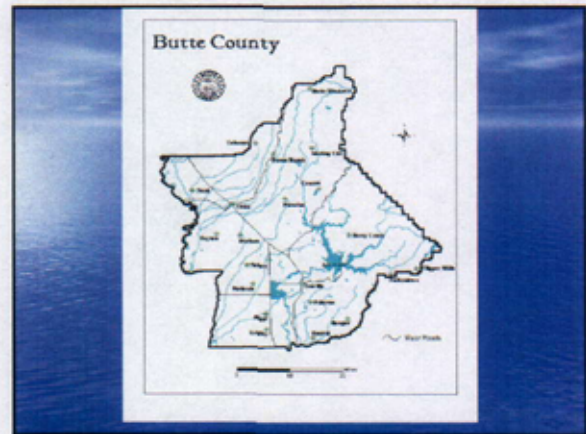
Ref. No. 3

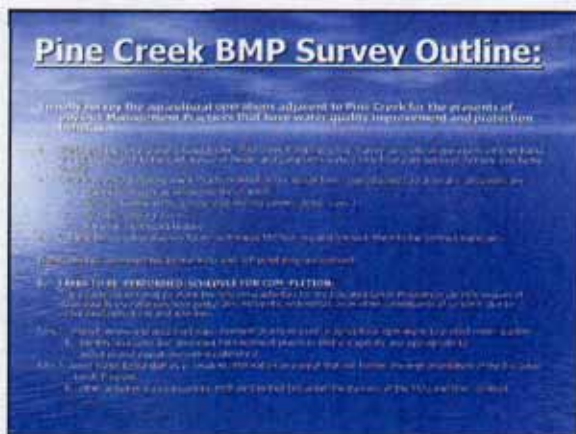
ATTACHMENT A:

POWERPOINT PRESENTATION OF PINE CREEK BMP SURVEY

Pine Creek BMP Survey Butte County

- RWQCB ILP Pilot Program
- Management Practice Survey
For water quality issues, Task 2B and 5B of Exhibit A
- Upper Pine Creek, 12/29/2006
- Lower Pine Creek, 08/20/2007

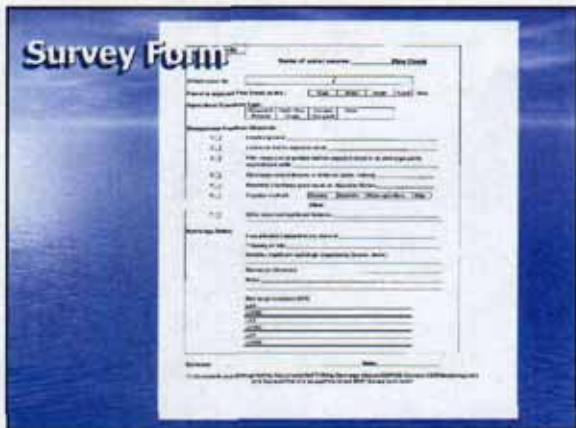




- Visual survey for obvious management practices
- Only survey parcels adjacent to Pine Creek
- Part I: From the Tehama County line to Pine Creek monitoring site on Ginaella Road.
- Part II: From Ginaella Road to the confluence with the Sacramento River.



1. Orchard floor level
2. Levees or berms adjacent the creek
3. Discharge control devices or features (culverts, gates, valves)
4. Filter strips and vegetative buffers adjacent creek or at discharge points
5. Retention / recharge pond areas or diversion ditches
6. Irrigation method
7. Any other obvious MP or significant features



Survey Overview Part I and II



- 1.5 mile length of the creek surveyed
- 20 parcels surveyed
- 10 parcels under agricultural permit
- 2 nonagricultural parcels in the survey area
- 10 agricultural operations having restricted materials permits
- 12,000 total acres surveyed
- 12,000 acres under cultivation
- 10 discharge points were documented
- 10 agricultural operations had discharge points directly to the channel (10 had some form of discharge control device)
- 1 agricultural operation had no observable discharge points directly to the channel
- All potential discharge area had heavy vegetation growth
- No significant hydrological engineering in the survey area
- Flow was present in Singer creek (from some source in Butte County and not a result of discharge in Butte County)
- Back flow from the Sac. River was present in the lower 1 mile of Pine Creek
- There was 1 irrigation discharge to the creek observed

Survey Overview Particular Observations:

- Flow was present in Singer creek. This was not a result of discharge in Butte County. It was from some source in Tehama County.
- Back flow from the Sac. River was present in the lower 1 mile of Pine Creek.
- The intervening 12 miles of streambed was essentially dry from May through November
- There was 1 irrigation discharge to the creek observed below the monitoring site.

Survey Results

Pine Creek BMP survey data summary:

Parcel ID	Area (Acres)	Discharge Point	Discharge Type	Discharge Control	Vegetation	Other Features
1	10	1	1	1	1	1
2	10	1	1	1	1	1
3	10	1	1	1	1	1
4	10	1	1	1	1	1
5	10	1	1	1	1	1
6	10	1	1	1	1	1
7	10	1	1	1	1	1
8	10	1	1	1	1	1
9	10	1	1	1	1	1
10	10	1	1	1	1	1

Survey Conclusions

Survey method conclusions:

- The seven MP survey items are likely the observation limits of this kind of survey.
- Any other type of management practice survey would require detailed examination of the agricultural operation.
- The possibility of discharge from secondary and tertiary, etcetera, parcels adjacent the drainage system is beyond the economic scope of this type of survey.
- 200 hours per mile of drainage was required to develop and conduct the survey and analyze, organize the data.

Survey Conclusions:

Statistical conclusions about agricultural operations and observed management practices:

1. 91% of the agricultural land surveyed has been leveled
2. 83% had constructed levees or berms adjacent the creek
3. 95% had Vegetative Buffer areas, Filter Strips in place, varied in width from 10 to 100 feet.
4. 82% had some kind of discharge device or features
 - 10% had no observable discharge points
 - 10% had discharge control devices or features of some kind
 - 10% had no control over discharge
5. 10% had irrigation retention / recharge pond areas or diversion ditches
6. 10% had motorized irrigation systems
 - 10% High pressure
 - 10% Gravity
7. No other obvious notable management practice was observed

Survey Conclusions:

Other General Conclusions:

- Irrigation run off / discharge from orchard operations does not appear to be a significant issue in this survey area.
- There needs to be a Singer Creek and possibly a Pine Creek monitoring site at the Tehama - Butte County line

End

ATTACHMENT B.

BMP SURVEY FORM AND SURVEY RESULTS

Upper Pine Creek Survey Data Summary Chart:

Parcel No.:	Acres	Operator ID or RMPN	Acres	Ag Type	Management Practices Observed							Irrigation discharge	tributaries	Flow in creek
					1	2	3	4	5	6	7			
047-070-074	59.86	0405268	25.0	Pasture								none	none	Present
047-070-027	84.10	0401834	90.0	Orchard	✓	✓	20-100	NDP		sp		none	none	Present
047-070-025	23.26	Non Ag		Non Ag										
047-070-024	77.00	5200319	135.0	Orchard	✓	✓	10-30	NDP		sp		none	none	Present
047-070-080	10.35	"		Orchard										
047-070-104	21.36	"		Orchard										
047-070-105	25.53	"		Orchard										
047-070-071	43.86	0400640	94.0	Orchard	✓	✓	50-200	✓		sp		none (2)	none	absent
047-060-038	79.02	0400425	169.0	Orchard	✓	✓	10-50	✓	✓	sp		none(1)	none	Present
047-060-048	116.56	Non Ag		Non Ag										
047-060-049	163.61			Orchard										
047-060-050	427.32	Nature Con		Non Ag										
047-060-048	***	0400420	273.0	Orchard	✓	✓	10-50	NDP		sp		none	none	absent
047-060-049	***	"		Orchard										
047-070-100	6.00	"		Orchard										
047-070-101	127.35	"		Orchard										
047-070-041	62.93	"		Orchard										
047-060-009	37.83	0400430	27.0	Orchard	✓	✓	✓	NDP		micro		none	none	absent
047-060-056	468.87	0405003	100.0	Orchard	part		✓	✓	✓	sp		none (4)	yes	absent
047-060-051	78.95	0400818	155.0	Orchard		✓	✓	NDP		sp		none	none	absent
047-060-052	95.66	"		Orchard										
047-060-025	78.93	"		Orchard										
047-020-014	479.44	0403617	465.0	Orchard	✓	✓	✓	✓	✓	sp/dr		none (5)	none	absent
047-020-015	490.27	0400977	387.0	Orchard	✓	✓	✓	✓		sp		none (6)	none	absent
047-030-005	102.72	0405102	90.0	Orchard	✓	✓	✓	NDP	✓	sp		none	none	absent
047-030-052	58.08	0405137	42.0	Orchard	✓	✓	~15	NDP		micro		none	none	absent
047-030-053	88.25	0402009	193.0	Orchard	✓	✓	~14	NDP	✓	gr/dr		none	none	absent
047-030-054	3.06	"		Orchard										
047-030-012	144.27	"		Orchard										
047-030-047	20.91	0403740	2768.0	Orchard	✓	✓	12-200	✓	✓	sp/dr gr/mic		none (9)	none	absent
047-030-051	25.39	"		Orchard										
047-030-048	6.43	"		Orchard										
047-080-012	154.28	"		Orchard										
047-110-001	166.26	"		Orchard										
047-110-003	179.53	"		Orchard										
047-120-022	975.14	"		Orchard										
047-120-023	596.53	"		Orchard										
047-040-003	879.71	"		Orchard										
047-140-014	1412.25	"		Orchard										
047-140-013	387.96	"		Orchard										
Totals	8258.83		5013.0		80%	80%	86%	93%	40%		N/A	none	N/A	N/A

No Discharge Point
Discharge Control Devices

NDP 53%
DCD 40%

↓
sp 73%
micro 20%
drip 20%
gr 13%

Pine Creek Survey, Part I,II Data Summary Chart:

Parcel No.:	Acres	Operator ID or RMPN	Acres	Ag Type	Management Practices Observed							Irrigation discharge	tributaries	Flow in creek
					1	2	3	4	5	6	7			
047-070-074	59.86	0405268	25.0	Pasture								none	none	Present
047-070-027	84.10	0401834	90.0	Orchard	✓	✓	20-100	NDP		sp		none	none	Present
047-070-025	23.26	Non Ag		Non Ag										
047-070-024	77.00	5200319	135.0	Orchard	✓	✓	10-30	NDP		sp		none	none	Present
047-070-080	10.35	"		Orchard										
047-070-104	21.36	"		Orchard										
047-070-105	25.53	"		Orchard										
047-070-071	43.86	0400640	94.0	Orchard	✓	✓	50-200	✓		sp		none (2)	none	absent
047-060-038	79.02	0400425	169.0	Orchard	✓	✓	10-50	✓	✓	sp		none(1)	none	Present
047-060-048	116.56	Non Ag		Non Ag										
047-060-049	163.61			Orchard										
047-060-050	427.32	Nature Con		Non Ag										
047-060-048	***	0400420	273.0	Orchard	✓	✓	10-50	NDP		sp		none	none	absent
047-060-049	***	"		Orchard										
047-070-100	6.00	"		Orchard										
047-070-101	127.35	"		Orchard										
047-070-041	62.93	"		Orchard										
047-060-009	37.83	0400430	27.0	Orchard	✓	✓	✓	NDP		micro		none	none	absent
047-060-056	468.87	0405003	100.0	Orchard	part		✓	✓	✓	sp		none (4)	yes	absent
047-060-051	78.95	0400818	155.0	Orchard		✓	✓	NDP		sp		none	none	absent
047-060-052	95.66	"		Orchard										
047-060-025	78.93	"		Orchard										
047-020-014	479.44	0403617	465.0	Orchard	✓	✓	✓	✓	✓	sp/dr		none (5)	none	absent
047-020-015	490.27	0400977	387.0	Orchard	✓	✓	✓	✓		sp		none (6)	none	absent
047-030-005	102.72	0405102	90.0	Orchard	✓	✓	✓	NDP	✓	sp		none	none	absent
047-030-052	58.08	0405137	42.0	Orchard	✓	✓	~15	NDP		micro		none	none	absent
047-030-053	88.25	0402009	193.0	Orchard	✓	✓	~14	NDP	✓	gr/dr		none	none	absent
047-030-054	3.06	"		Orchard										
047-030-012	144.27	"		Orchard										
047-030-047	20.91	0403740	2768.0	Orchard	✓	✓	12-200	✓	✓	sp/dr gr/mic		none (9)	none	absent
047-030-051	25.39	"		Orchard										
047-030-048	6.43	"		Orchard										
047-080-012	154.28	"		Orchard										
047-110-001	166.26	"		Orchard										
047-110-003	179.53	"		Orchard										
047-120-022	975.14	"		Orchard										
047-120-023	596.53	"		Orchard										
047-040-003	879.71	"		Orchard										
047-140-014	1412.25	"		Orchard										
047-140-013	387.96	"		Orchard										
047-540-002	2225.16	0403740	1201.0	Orchard	✓	✓	20-100	✓		micro-sp		none(5)	yes (1)	absent
047-150-129	60.86	5200032	53.3	Orchard	✓	✓	20-100	✓		micro-sp		none(1)	yes (1)	absent
047-150-118	57.57	"	68.8	Orchard										
047-150-042	197.55	"	188.2	Orchard										
047-190-025	251.16	0400215	240.0	Orchard	✓		✓			sp		none(2)	none	absent
047-190-019	104.40	0400433	99.0	Orchard	✓		✓			micro-sp		none(1)	none	water present
047-190-018	101.58	"	100.0	Orchard										
047-180-011	461.32	1100056	405.0	Field crops	✓	✓	20-50	✓		gr		yes(1)	none	yes
047-180-029	103.54	1101197	103.54	Non Ag	✓	✓	30-200	NDP	✓	drip		none	none	yes
047-180-064	282.86	"	282.86	Non Ag										
047-180-065	35.11	"	35.11	Non Ag										
047-180-063	6.30	"	6.30	Non Ag										
039-590-013	59.69	0400408	22.0	Orchard	✓	✓	✓			sp		none (1)	none	water present
039-590-002	125.62	0403613	125.62	Orchard	✓	✓	✓			micro		none (1)	none	water present
Totals:	54	12331.55	23	7943.7	91%	83%	96%	83%	30%	↓	N/A	1	N/A	N/A

No Discharge Point
Discharge Control Devices
No Discharge Control

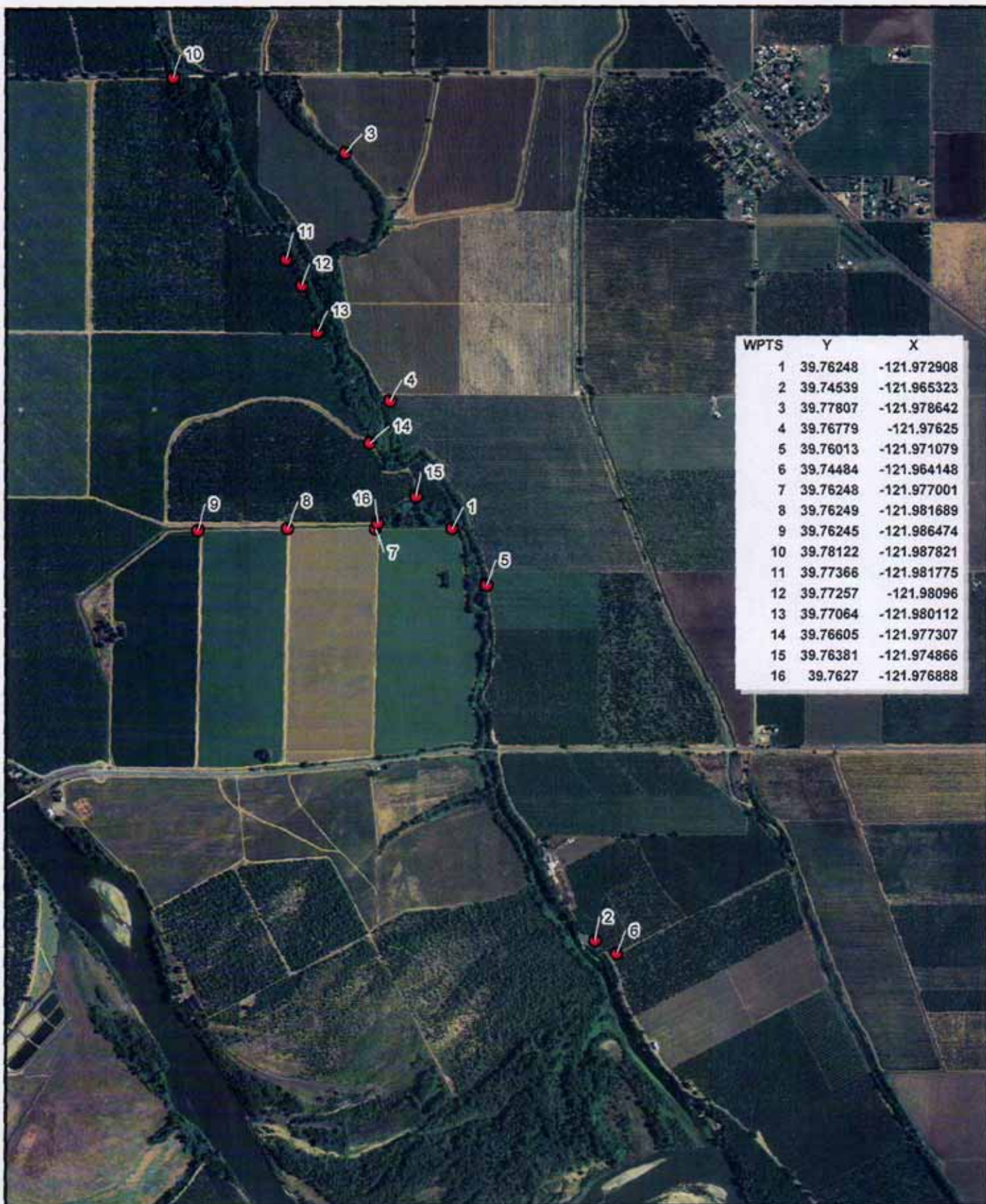
NDP 39%
DCD 43%
NDC 17%

sp 70%
micro 30%
drip 17%
gr 13%

Sprinkler
Micro sprinklers
Drip systems
Gravity

ATTACHMENT C:

PINE CREEK PHASE II -- DISCHARGE POINTS



WPTS	Y	X
1	39.76248	-121.972908
2	39.74539	-121.965323
3	39.77807	-121.978642
4	39.76779	-121.97625
5	39.76013	-121.971079
6	39.74484	-121.964148
7	39.76248	-121.977001
8	39.76249	-121.981689
9	39.76245	-121.986474
10	39.78122	-121.987821
11	39.77366	-121.981775
12	39.77257	-121.98096
13	39.77064	-121.980112
14	39.76605	-121.977307
15	39.76381	-121.974866
16	39.7627	-121.976888

Pine Creek Phase II

WGS 1984 (GPS)
July 13, 2007
E:\Saly\Pine_creek_2